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Financial Distress: Identifying Influencing Factors and Moderating Dynamics in Manufacturing Companies



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ABSTRACT: In order to adapt to changes in the economy and reduce possible losses, financial distress plays a critical strategic role. Therefore, the purpose of this study is to determine the characteristics that reduce financial distress as well as the factors that moderate it. All manufacturing companies listed on the Indonesia Stock Exchange between 2017 and 2021 are included in this quantitative study. A total of 79 companies were chosen for observation during a five-year period using the purposive sample method, yielding 395 observations. Using Stata software, linear regression and moderated regression analysis (MRA) were used to analyze the data. This study demonstrates that the factors of leverage and ROA each have a significant impact on financial distress. It wasn't demonstrated that operating cash flow significantly affects financial distress, nevertheless. Additional findings revealed that size significantly moderates the association of leverage on financial distress. This study makes a significant contribution to our understanding of the variables that lead to financial distress, particularly in light of the manufacturing sector's poor performance during the COVID-19 pandemic. Furthermore, revealing this moderating influence might benefit investors significantly by enabling them to take business size into consideration when assessing corporate investments.

KEYWORDS: Financial Distress Factors, Manufacturing Performance, Moderating Role of Company Size, Return on Assets Impact, Leverage and Financial Distress

I. INTRODUCTION

A key component of financial risk analysis is financial distress, which is a crucial phenomenon in the context of corporate financial management (1). In today's ever-shifting business landscape, it is crucial for firms to have a thorough grasp of financial distress in order to devise successful strategies and respond appropriately to potential economic issues (2). More than simply a lack of cash on hand, this occurrence indicates a crisis situation that can have a negative impact on the company's worth and capacity to keep operations running. According to (3), financial distress serves as a red flag for firm management in a constantly changing global economy where economic uncertainty might strike at any moment. Both the end of operations and a decline in firm value are negative consequences that might affect shareholders, workers, and other interested parties. Consequently, in order to face economic changes and minimise losses, it is crucial to have a thorough comprehension of the variables that cause financial distress.

Many businesses in Indonesia had a sharp drop in performance in 2020, when the COVID-19 pandemic struck. Data from the Purchasing Manager Index shows that manufacturing enterprises' performance declined in April 2020, hitting 27.5 from 45.3 in March 2020, indicating that this problem is also present in the manufacturing sector. A decrease in performance is This significant shift was recognised as a possible cause of financial distress. Consequently, this study focused on manufacturing companies as its research objects to better understand the pandemic's effect on this industry and the financial risks that may develop from a drop in performance.

Factors that can influence financial distress have been the subject of numerous previous studies. Further research is needed to clarify the association between Return on Assets (ROA), leverage, and Operating Cash Flow (OCF) on financial distress, as prior studies found conflicting results. While some studies have shown that ROA, leverage, and OCF significantly affect financial distress (5–8), others have shown the opposite (9–12). This discrepancy in conclusions highlights how intricate the link is among ROA, leverage, and OCF as it pertains to financial distress for corporations.

In order to untangle the knotty interplay between ROA, leverage, and OCF as they pertain to financial distress, this study adds a moderating variable that centres on firm size. The knowledge that firm dimensions, both large and small, can give operational flexibility, which effects financial distress, is the driving force behind the selection of company size as a moderating variable (13).

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A company's size affects its resource management and operations, which in turn affects the level of financial risk it may face (14). This realisation informed the decision-making process. To better understand the dynamics of the relationship between ROA, leverage, and OCF on financial distress, particularly with respect to reactions to firm size, this research examines the incorporation of firm size as a moderating component.

In light of the existing literature on the subject of declining performance in Indonesian manufacturing companies and the contradictory findings from earlier studies, the current investigation seeks to examine how firm size influences the moderating effect of ROA, leverage, and operating cash flow on the likelihood of financial distress. With the goal of offering a more complete picture to practitioners, researchers, and policymakers, this research aims to significantly contribute to understanding the complex dynamics of factors that impact the level of financial risk of manufacturing organisations.

II. THEORY & HYPOTHESIS DEVELOPMENT

When an organisation's operational cash flow is inadequate to cover current obligations (such as interest expenses or credit trading), it is compelled to take remedial action, which is known as financial distress (15). A company's financial distress can also be defined as an economic state marked by deteriorating financial performance and health (16). The costs of financial distress can escalate when distressed businesses are already in a precarious position (17). An early warning system for management to analyse prospective financial troubles can be displayed by several financial ratios, including guarantee ratios, loss ratios, and non-financial ratios (16). Financial distress has been examined in relation to ROA, leverage, and OCF in a number of prior studies. There is a strong correlation between a company's ROA and the dynamics of its financial distress. ROA measures how well a business turns its total assets into profit (18). Reduced ROA can mean less revenue coming in, which could lead to financial problems (19). Beyond that, cash flow and the capacity to pay bills are also affected by a decline in ROA (1). Consequently, the likelihood of financial distress for the organization can rise if ROA falls. Reductions in operational efficiency are reflected in changes in ROA performance, which can also be a strong indicator of the degree of financial distress a company is experiencing. As a result, we postulate the following hypothesis:

H1: ROA has a significant influence on Financial Distress

Raising financial risk through leverage, or debt ratio, can alter a company's degree of financial distress (1). Companies with high levels of leverage may find it more difficult to satisfy their financial obligations due to the increased interest expenses and payment requirements. Net profit might fall due to higher interest costs caused by high debt (10), which could lead to financial distress (20). This view holds that changes in leverage levels may affect the financial dynamics of a business by raising the risks connected with those dynamics. Consequently, the likelihood of experiencing financial distress can rise in tandem with the leverage value. This justification allows us to postulate the following hypothesis:

H2: Leverage has a significant influence on financial distress

Many discussions in the field of finance center on the question of how operating cash flow affects fluctuations in a company's financial distress. One measure of a business's financial health is its operational cash flow, which shows how well the company can turn its operations into cash. (21) note that when a company's OCF declines, it often means that its ability to create cash flow from company operations has also declined, which can lead to financial distress. This is in line with the statement (5), which states that OCF significantly affects the degree of financial distress experienced by the corporation. The degree to which a company's financial distress can be affected by changes in operating cash flow and a thorough comprehension of this relationship can greatly aid in the management of financial risk. Here is a hypothesis that is derived from this explanation:

H3: OCF has a significant influence on financial distress

The mechanics of how financial factors like ROA, leverage, and OCF interact with the degree of financial distress are largely dependent on the size of the company. Because various-sized businesses have diverse access to resources and markets, the amount of financial risk they face might vary greatly (22). Large-scale enterprises with better access can lessen the effects of ROA, leverage, and OCF on financial distress. Therefore, larger firms are better able to handle financial distress resulting from a decline in ROA than smaller businesses. Another crucial aspect of this dynamic is the capacity of major corporations to take on more debt without immediately experiencing financial distress. According to (23), large-scale enterprises can effectively handle the risk of financial distress. Reducing ROA by making better use of operational cash flow or managing capital structures more efficiently can lead to financial distress. Accordingly, the degree of financial distress that various-sized businesses will face will vary (24). When it comes to dealing with changes in ROA, leverage, and operating cash flow, a bigger company may be better equipped than a smaller one to face financial distress. The following hypothesis is developed from this explanation:

H4: Company size can moderate the relationship between ROA on financial distress.

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H5: Company size can moderate the relationship between leverage on financial distress.

H6: Company size can moderate the relationship between OCF on financial Distress.

III. METHOD

This study employed a quantitative research design. A total of 213 manufacturing enterprises, all listed on the Indonesia Stock Exchange from 2017 to 2021, make up the research population. The following factors were considered for inclusion in the sampling process, which used a purposive sampling technique: 1) All financial reports were recorded and reported in a sequential fashion during the research period. 2) The reporting currency used was the rupiah. 3) Data with outlying values is omitted from the data set. A grand total of 395 observations were conducted over the course of five years, with 79 companies being chosen for observation based on these criteria. The linear regression method, implemented in Stata, was used for data analysis. According to (25), the Moderated Regression Analysis (MRA) approach is used to examine moderating variables in this study. Variables utilized in this study are as follows:

A. Dependent Variable (Financial Distress)

According to (26), financial distress is the state in which a business or other financial entity is facing significant financial challenges or crises. Typically, a corporation is in financial distress if it has trouble paying its bills, such as debt or interest (27). An inadequate capital structure, declining revenues, or persistent operational losses are all potential causes of this state. The following formula can be used to measure financial distress (28):

$$Z = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4 + 3.25 \quad (2.1)$$

Equation description:

X₁ = working capital to total assets

X₂ = retained earnings/total assets

X₃ = operating income/total assets

X₄ = book value of equity/total liabilities

B. Independent Variable

Return on Assets (ROA)

ROA is a financial ratio that compares a company's net profit to its total assets (29). It is a measure of the company's profitability. ROA is a useful metric for assessing a business's asset use and profitability. ROA calculation is based on (5):

$$\text{ROA} = \text{income before extraordinary item} / \text{total assets} \quad (2.2)$$

Leverage

In the world of finance, leverage is the utilization of debt or borrowed money to raise the possible profit or loss of an enterprise or investment (30). (5) states that the following formula is used to calculate leverage:

$$\text{Leverage} = \text{total debt} / \text{total assets} \quad (2.3)$$

Operating Cash Flow (OCF)

Measuring the net cash flow that arises from a company's operational operations over a specific time period is essentially the operationalization of the OCF variable (31). In this case, the following formula can be used to determine OCF:

$$\text{Operating cash flow Ratio} = \text{operating cash flow} / \text{total assets} \quad (2.4)$$

C. Moderating Variable (firm size)

According to (22), company size is a crucial factor in business and financial analysis as it provides insight into the economic influence, capability, and complexity of an organization within a specific industry or market. The term "company size" describes the proportions or magnitude of a business that indicate the amount of assets the organization possesses. According to (14), the natural log of total assets is used to calculate the size of a corporation.

D. Moderated Regretion Analysis

Regression models are a key tool used in this study to reveal the intricate nature of the interactions between the variables. Two regression models are used in the analytical procedure, which is sequentially organized. The direct impact of the independent variable on the dependent variable is examined using the first model. The goal of this model is to pinpoint important effects that are directly attributable to independent factors (without any moderating influence). Analyzing the function of moderating variables in the relationship between the independent and dependent variables is the focus of the second model, which is being developed concurrently. This study makes an effort to investigate and quantify any moderating effects that may affect and guide the correlation between these variables using the second model. Regression models used in this study consist of:

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$$ZSORE = \beta + \alpha_1 ROAi,t + \alpha_2 LEVi,t + \alpha_3 OCFi,t + \varepsilon_i,t \quad (2.5)$$

By including the firm size variable and examining the interactions between ROA and firm size, leverage and firm size, and OCF and firm size, the regression model for examining moderating variables is completed. The following is the second model:

$$REM = \beta + \alpha_1 ROAi,t + \alpha_2 LEVi,t + \alpha_3 OCFi,t + \alpha_4 Size_i,t + \alpha_5 Size_ROAi,t + \alpha_6 Size_LEVi,t + \alpha_7 Size_OCFi,t + \varepsilon_i,t \quad (2.6)$$

IV. FINDING AND DISCUSSION

The data analysis stage is essential to doing this research since it yields a comprehensive grasp of the topic under study. Descriptive statistical analysis is a crucial first step that enables researchers to fully describe the properties of the data, such as the mean, standard deviation, minimum value, and maximum value. An extensive image of the data distribution is produced by providing descriptive statistics, which makes it easier to spot broad trends, distributional centers, and potential variances in the data set. The outcomes of the descriptive statistical analysis we conducted are as follows:

Table 1. Descriptive Statistics Results

Variable	Obs	Mean	Std. dev.	Min	Max
ZSCORE	395	8.02921100	4.42351400	-13.27520000	22.48478000
ROA	395	0.06700770	0.11006340	-0.94812910	0.50273820
LEV	395	0.44899380	0.26530610	0.06302940	2.82104100
OCF	395	0.07175720	0.09939280	-0.25504970	0.53685850
Size	395	15,300,000	44,500,000	89,300	367,000,000

Note: Nilai size dalam jutaan rupiah

Table 1's study shows that, on average, company have a positive rate of return on their assets, as indicated by the average ROA value of 0.0670. The extent to which this variance can occur is demonstrated by the range of ROA values, which vary from -0.9481 to 0.5027. The existence of negative values suggests that some companies might be losing money or producing less profitable asset returns. Conversely, a positive maximum value indicates the presence of a business with superior ROA performance. Furthermore, the study's average leverage number of 0.4490 suggests that the majority of the organizations have debt levels that are approximately 44.90% of their total capital or net assets.

It is possible to deduce that the company generally has positive operating cash flow with an average OCF value of 0.0718. Additionally, the average value of the company size variable is 15,300,000 million, with a comparatively high standard deviation of 44,500,000 million. The extremely large range of figures, which spans from 89,300 million to 367,000,000 million, indicates a notable variation in the size of the research-focused enterprises. According to the findings of (32), a financial distress value above 2.6 indicates the absence of a significant risk of bankruptcy, the average financial distress of 8.0292 recorded in this study can be interpreted as meaning that the companies in the sample do not have a significant risk of bankruptcy.

The second phase of this research entails inferential statistical analysis utilizing Moderated Regression Analysis (MRA), following the descriptive analysis stage that offers a detailed description of the properties of the research variables. We performed a multicollinearity test to make sure there was no strong correlation between the independent variables that were the subject of the study before performing the regression analysis. These are the multicollinearity test findings:

Table 2. Multicollinearity Test Results

	ROA	LEV	OCF	Size
ROA	1			
LEV	-0.3153	1		
OCF	0.6154	-0.2386	1	
Size	0.2532	-0.0252	0.2582	1

Additionally, in line with the methods put forward by (33), classical assumptions were established utilizing robust standard errors to get around probable heteroscedasticity and autocorrelation symptoms. More precise and consistent parameter estimates are anticipated using this method. In the meanwhile, we adopt the framework proposed by (34) to assume that the regression model used is normally distributed because the number of data exceeds 100. As in earlier studies (Al-Hadi et al., 2017; and Gertler & Gilchrist, 2018), this study also employs fixed effects in the regression equation to account for time trends. The

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regression model is tested once it has been cleared of classic assumption test. The following are the regression model test results:

Table 3. Results of Regression Model Testing

Variable	Model 1			Model 2		
	Coefficient	Robust std.	P>t	Coefficient	Robust std.	P>t
ROA	9.2043	1.4718	0.000	27.219	22.879	0.238
LEV	-8.2296	1.2557	0.000	62.072	22.769	0.008
LogOFC	1.0658	0.7866	0.179	21.775	15.415	0.162
LogSize	-0.65769	0.3500	0.064	1.6814	0.7949	0.038
Size_ROA				-0.7242	0.8807	0.413
Size_LEV				-2.6645	0.8781	0.003
Size_OFC				-0.770	0.5517	0.167

Table 3's data analysis findings indicate that the ROA p-value is 0.000, which is less than the 0.05 level of significance. The Return on Assets (ROA) variable has a significant influence on financial distress, according to these findings. Prior descriptive analysis revealed that the sample companies generally had positive rates of return on their assets, with an average ROA value of 0.0670. These results offer a crucial foundation for comprehending the original setting of company financial performance. In this context, ROA performance refers to performance that can be utilized to lessen the likelihood of financial distress. These findings have significant ramifications for risk management and financial decision-making in businesses. Financial managers can be more proactive in creating plans to enhance their financial performance in the hopes of lowering the danger of bankruptcy by realizing that high ROA correlates with lower levels of financial distress. Consistent with earlier studies (5,7) that discovered ROA has a major impact in determining the direction of financial distress.

The study's leverage variable's inferential statistical analysis produced a p-value of 0.000, indicating a strong correlation between leverage's financial performance and the level of financial distress the company experienced. The negative coefficient value indicates that there is a unidirectional relationship between leverage and the company's level of financial distress, according to inferential statistical analysis. In this instance, a higher leverage value denotes a higher level of debt for the company. Conversely, the greater the company's financial problems, the lower the financial distress value (32). Consistent with earlier studies that discovered a company's likelihood of experiencing financial distress increases with its leverage value (5,7).

According to the analysis's findings, the relationship between operating cash flow and financial distress has a p-value of 0.179, which is higher than the 0.05 level of significance. Consequently, it is not possible to conclude that operating cash flow has a significant effect on financial distress. Based on the results of the multiple linear regression analysis, there is not enough evidence to say that operating cash flow and financial distress in manufacturing sector businesses are significantly linked. This may occur as a result of the company's substantial debt. The study's second hypothesis, which was tested, revealed that having a lot of debt makes a company more susceptible to financial distress. Accordingly, operating cash flow may become less significant as a sign of financial distress in this scenario if a company has a tendency to rely on outside funding sources (such as debt) to meet its financial demands (11).

Firm size, which serves as a pure moderating variable in this study, has a significant impact on the relationship between leverage and financial distress, according to the Moderated Regression Analysis (MRA) analysis. According to the first model, financial distress is not significantly influenced by firm size on its own. The second model, however, indicates that firm size has a major bearing on the degree of financial distress. These findings suggest that the size of the company modifies the dynamics of the connection between the independent and dependent variables in a pure moderating manner.

An analysis of the data further reveals that firm size moderates the relationship between financial distress and leverage, with a significant interaction value of 0.003 between the two variables. Consistent with the findings of the second hypothesis, the interaction coefficient between leverage and firm size exhibits a negative value. According to this interpretation and the results of previous research, the likelihood of financial distress is lower for large companies since they have more resources to pay off debt (37). This unidirectional relationship demonstrates that size has the capacity to reduce the impact of leverage on the risk of financial distress. The MRA analysis's findings significantly advance our knowledge of the variety of intricate aspects affecting

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the financial stability of corporations. Specifically, the size of the company seems to be a significant factor in reducing the detrimental effect of leverage on the degree of financial distress.

Though it hasn't been demonstrated that firm size can mitigate the association between ROA and financial distress, company size does highlight the flexibility of the organization in lowering the risk of default in the analysis of the observed data. The significant value of the interaction between ROA and firm size on financial distress, which is 0.413, demonstrates this. Due to the constraints of company size in directly impacting the operational success of the company in earning profits, it is possible that the relationship between ROA and financial distress cannot be moderated by company size. The ability of a larger corporation to be more flexible has only been shown to lower the likelihood of nonpayment of debt (37).

As demonstrated by the interaction value of 0.167 between OCF and firm size on financial distress, firm size has also not been shown to mitigate the association between OCF and financial distress. This is probably because OCF might not accurately depict the company's financial situation or prospective financial hazards that could result in financial distress. Because the OCF does not fully cover all components of financial risk that might lead to financial distress, some companies may experience financial distress while having a good OCF. Model 1 has demonstrated that OCF has no significant effect on financial distress. Therefore, the size of the company cannot significantly moderate the relationship between OCF and the degree of financial distress.

V. CONCLUSION

In order to adapt to changes in the economy and reduce possible losses, it is strategically important to have a thorough awareness of the elements that lead to financial distress. This study attempts to discover elements that can lessen financial distress and variables that have a major impact on it in the context of the manufacturing company's decline in performance. According to an analysis of the data, leverage and ROA have a significant impact on financial distress, with ROA performance being identified as a crucial element that can be utilized to reduce the likelihood of financial distress. Leverage's high value serves as another warning sign for potential financial distress. However, because operating cash flow (OCF) does not accurately reflect the financial health of the company, particularly when the company has significant obligations, it has not been demonstrated to have a direct impact on financial distress. These results advance our knowledge of the dynamics of financial distress in the context of economic transformation, and their ramifications may serve as a foundation for the creation of risk management techniques that are more successful in the manufacturing sector.

Further investigation reveals that the size of the company moderates the relationship between leverage and financial distress. These findings support the idea that larger businesses have more financial capacity to settle debt and lower their chance of experiencing financial distress. It is important to acknowledge that there is no significant moderating effect of company size on the correlation between ROA and financial distress. This demonstrates that a company's scale has limitations when it comes to directly influencing its operational performance to achieve profits and lower the danger of financial distress. In addition, the size of the organization cannot mitigate the relationship between operating cash flow (OCF) and financial distress. According to these results, OCF might not accurately depict the company's financial situation or prospective financial hazards that could put it in financial jeopardy. Therefore, there is no discernible moderating effect of the company's size on the association between OCF and financial distress.

Particularly in light of manufacturing enterprises' diminishing performance, this research makes a significant contribution to our understanding of the mechanisms underlying financial distress. Financial distress was found to be significantly influenced by indebtedness and return on assets (ROA). This offers managers useful advice on how to lower the danger of financial distress by concentrating on enhancing operational performance and management leverage. The moderating effect of company size is another noteworthy discovery. Investors can benefit significantly from uncovering this moderating effect, which enables them to consider company size as a crucial component when assessing corporate investments. The size of the company must be taken into account when evaluating its capacity to manage and lower the risk of financial distress in addition to producing debt returns.

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